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3400 Forest Insect and Disease Management August 14, 1980

Functional Assistance Trip

Forest Supervisor, Wenatchee NF

On July 31, Gregory Filip, RO Pathologist, visited the Lake Wenatchee Ranger District, Wenatchee National Forest. Purpose of the visit was to examine tree mortality caused by root disease in approximately 700 acres of the proposed Upper Huck Sale area (T. 28 N., R. 17 E., sec. 19, 20, 29, 30). He was accompanied by Monty Bickford, SO Silviculturist and Don Adkinson, on detail from the Mt. Baker-Snoqualmie National Forest.

The stands they examined were primarily old-growth and composed of several conifer species: grand fir, Douglas-fir, ponderosa pine, lodgepole pine, white pine, Engelmann spruce, western hemlock, western redcedar, and Pacific silver fir. Heavy mortality caused by laminated root rot and Armillaria root rot was found primarily in areas where grand fir predominated. Also, most of the living grand fir had thin crowns, dead tops, and dead branches. On many occasions, either laminated root rot or Armillaria root rot were found infecting such trees. Although Douglas-fir was seriously affected, it appeared to be doing slightly better than the grand fir. All other tree species besides grand and Douglas-fir appeared to be doing well in disease pockets; they showed no crown symptoms or mortality. Only on one occasion was an uprooted and *Phellinus*-infected ponderosa pine and Engelmann spruce found. Occasionally, an Armillaria-infected, old-growth ponderosa pine, white pine, lodgepole pine, or Engelmann spruce were found. Other important diseases or insects causing tree mortality included the following:

Douglas-fir - Douglas-fir dwarf mistletoe (*Arceuthobium douglassi*)
- Brown cubical butt rot - (*Polyporus schweinitzii*)

White pine - White pine blister rust (*Cronartium ribicola*)
- Mountain pine beetle (*Dendroctonus ponderosae*)

Lodgepole pine - Mountain pine beetle (*D. ponderosae*)

Pacific silver fir - Silver fir beetle (*Pseudohylesinus sericeus*)

Grand fir - Fir engraver (*Scolytus ventralis*)

The general overall decadent appearance of the stands examined and the subsequent heavy infection and infestation by several potentially serious diseases and insects warrants stand replacement following clearcutting. Any form of partial cutting will only aggravate the root disease situation and cause increased damage in residual trees, especially firs, either by new infections leading to mortality or by possible windthrow of already root diseased trees. Partial cutting also will result in increased root infection of regeneration either advanced or established after cutting. Also, Douglas-fir regeneration will be exposed to dwarf mistletoe infection from infected residual overstory trees.

It may be possible in some cases to retain disease and insect-free seed trees of any species besides grand fir or Douglas-fir. This will encourage the regeneration of root disease-resistant species.

Following clearcutting of the area, it is recommended that measures be taken to prevent the regeneration of grand fir and Douglas-fir in root diseased areas. These areas should be planted or naturally regenerated to more disease-resistant species; ponderosa pine or lodgepole pine on dry sites, Pacific silver fir, white pine or western hemlock on intermediate sites, and western redcedar or Engelmann spruce on wetter sites.

Some mortality due to Armillaria root rot should be expected in all species. Examination of three 15-year-old plantations adjacent to the sale area revealed some mortality caused by *Armillaria* in ponderosa pine, lodgepole pine, and Douglas-fir. Unlike *Phellinus weirii*, causal agent of laminated root rot, *Armillaria mellea* is not as species specific; it will attack and kill any conifer species given the proper conditions. However, *Armillaria* frequently acts as an opportunist by killing trees already weakened by other factors, i.e. drought, suppression, mechanical damage, insect defoliation, bark beetle attack, or other root diseases. Vigorous, actively growing trees in many cases are able to resist infection and mortality caused by *Armillaria*.

If lodgepole pine is regenerated, it should be grown on short rotations of 80-90 years to prevent epidemics of mountain pine beetle. If white pine is regenerated, only blister rust-resistant stock should be planted.

In summary, complete replacement of the decadent stands with vigorous, root disease-resistant trees is the best possible prescription for the area. Such an option will not only utilize dead and dying trees in the present stand, but greatly reduce mortality in future stands.

Additional survey of the proposed sale area by FIDM is not warranted, since the District knows the distribution and general location of the diseased areas.

If FIDM can be of further assistance concerning this and other proposed sale areas, feel free to contact us.

PAUL E. BUFFAM

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cc: Monty Bickford, SO

GmFilip:PJ